

ENTOMOLOGY.—Two new species in the genus *Armigeres* Theobald, 1901, from northern Thailand (*Diptera: Culicidae*).¹ DEED C. THURMAN, JR.,² AND ERNESTINE B. THURMAN.³

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During an investigation of the species of vectors and potential vectors of malaria and other mosquito-borne diseases in northern Thailand in connection with the expanded malaria and filariasis control program being conducted in that nation, two undescribed forms of *Armigeres* Theobald, 1901, were found. Though the descriptions are based on single female specimens, the characters as noted are not those of the currently recognized species of *Armigeres*.

***Armigeres (Armigeres) bhayungi*, n. sp.**

Female medium sized, 5 mm. Palpi, proboscis, and tarsi dark, unbanded. Clypeus bare. Posterior pronotal lobes with dorsal patch of narrow dark scales. Sternites, propleura, and forecoxae white scaled.

Head: Proboscis, palpi, and clypeus dark. Palpi one-sixth length proboscis. Clypeus bare. Tori with white scales on inner and dorsal surfaces. Vertex with flat metallic blue scales, flat creamy scales in midline on basal half; few upright dark scales at nape; eye border of flat creamy

scales contiguous with lateroventral white patches.

Thorax: Mesonotum with narrow, dark, metallic blue scales; creamy scales form border from front to wing roots; anterior pronotal lobes and posterior pronotal lobes with flat white scales, with few narrow, curved dark scales and dark setae on dorsal portions; propleura and forecoxae white scaled; patches on pleura white; two lower mesepimeral bristles present; pre-scutellum and scutellum dark scaled; capitulum of halteres dark metallic blue; wings all dark scaled; forelegs dark with femora white beneath; midlegs dark with dark upper edge of femora increasing in width from base to apex on posterior surface; hind legs dark, femora white to apex on anterior and ventral surfaces.

Abdomen: Tergal scales dark brownish with blue metallic luster; small lateral semicircular patches of white scales; all sternites with white scales.

In general habitus *A. bhayungi* appears near *Armigeres jugraensis* (Leicester, 1908), *Armigeres malayi* (Theobald, 1901), or *Armigeres kuchingensis* Edwards, 1915, differing from the first by having a light border around the front of the mesonotum and having the forecoxae all white scaled, and from *A. malayi* by having a definite broad white mesonotal border to the wing bases and the clypeus bare. It differs from the last species by having dark blue metallic scales on the mesonotum and dark scales on the dorsal portion of the posterior pronotal lobes. In *A. kuchingensis* the forecoxae and the sternites III–VI may be all white scaled or show patches of bronzy scales, while sternite VII is dark with a subapical light band. In the holotype of *A. bhayungi* the forecoxae and all sternites are white scaled.

Holotype, female, USNM 63910. Male and immature stages are unknown.

Type locality: Tad Muey Falls on Doi (Mountain) Sutep, Chiangmai Province, Thailand, elevation 4,000 feet. A single female was netted by Manop Rattanapradith in a shady jungle area near Tad Muey Falls (DC & EB Thurman collection #M-545), February 15, 1953.

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² Sanitarian, Division of International Health, U. S. Public Health Service, assigned as Regional Malaria Control Adviser for Northern Thailand with the U. S. Operations Mission to Thailand, International Cooperation Administration. (Mr. Thurman died suddenly in Chiangmai after having served more than two years there. This manuscript was completed by the junior author.)

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This species is named in honor of the late Dr. Luang Bhayung Vejjasatr, director general of the Department of Health, Ministry of Public Health of Thailand, in recognition of his outstanding achievements as a pioneer in the malaria control program in Thailand, and in appreciation for the privilege of having known him as a friend and coworker during our assignment in his nation.

***Armigeres (Leicesteria) vimoli*, n. sp.**

Female medium sized, 5 mm. Palpi, proboscis, and tarsi dark, unbanded. Clypeus bare. Abdominal markings of white scales.⁴ Light scales on thorax light yellow or drab white.

Head: Palpi dark, a little longer than one-half length of proboscis. Proboscis dark metallic blue with ventral line of bluish-white scales. Clypeus bare. Tori with white scales medially placed and few gray ones above. First flagellar segment with white scales. Occiput with dark blue scales, light yellow scales around margin of eyes,⁴ in lateral patch, and at nape; few upright, forked, light scales at nape; lateral patch followed by dark patch; light scales under the head.

Thorax: Distinctly produced over the head; bronzy-brown, narrow curved scales on mesonotum; pale yellow, broad shaggy scales on front margin around to wing bases; drab tan scales over wing bases, in midline on prescutellum, and on mid and lateral lobes of scutellum. Posterior pronotal lobes with pale yellow, shaggy scales and a few light weak bristles. Upper portion of propleura with drab white scales, lower portion with black scales. All other pleura light scaled. Lower mesepimeral bristles absent. Capitulum of halteres dark scaled. Wing scales dark grayish brown, few tan scales at base of costa; posterior and anterior cross veins separated by the length of the latter. Legs: Forecoxae light scaled with central patch of black; femora dark above, white below; tibiae shorter than

mid and hind tibiae, dark above, light below; tarsi dark. Midcoxae white scaled; femora dark anteriorly, few light scales in apical fringe, light underneath; tibiae dark above, light below; tarsi dark. Hind coxae white; femora dark on narrow dorsum, light on sides and beneath, tibiae dark above, light below; tarsi dark.

Abdomen: Tergites dark with scales of bluish metallic luster; subapical lateral white spots visible dorsally on tergites III-VI. Tergite VIII with basal white spot. Lateral markings all white. On tergite II lateral markings abruptly angles, on tergites III-VII not markedly concave, the upper margin being almost straight. Sternite II all white. Sternites III-VII with narrow apical dark bands (grayish brown); VIII all drab white scaled.

Holotype, female. USNM 63217. Male and immature stages are unknown.

Type locality: Doi (Mountain) Sutep, Chiangmai Province, Thailand, February 21, 1953 (Deed C. Thurman, Jr., DC & EBT collection #558). A single female was netted while flying over a small stream in a shady jungle valley, elevation 2,000 feet, near a rest cabin owned by an American Missionary, Dr. Richard Buker. This female was collected in association with specimens of *Armigeres annulitarsis* Leicester, 1908, *Armigeres longipalpus* Leicester, 1904, and *Aedes* spp. A second female which appears to be conspecific with *A. vimoli* was netted in the same location at the same time by Manop Rattanopradith; however, the specimen is damaged, and it is impossible to make a positive determination.

In habitus *A. vimoli* appears to be near *Armigeres digitatus* Edwards, 1914, or *Armigeres pectinatus* Edwards, 1914, though differing in the coloring and type of the scales on the posterior pronotal lobes, *A. vimoli* possessing pale yellow, shaggy scales while the other two species have white, flat scales.

It is a pleasure to name this species for Dr. Vimol Notananda, Malaria Control Officer in Chiangmai, a friend and coworker who is contributing much to the control of malaria in northern Thailand.

⁴ Since the initial writing of the description, the specimen has become oily, and the white scales now appear yellowish. The scales around the eye margins are rubbed.